FAA AVIATION NEWS

MARCH 1967

COVER

General aviation pilots flying to Mexico City for next year's Olympic Games will view majestic Popocatepetl, the fifth largest peak in North America. See page 11 for story on smoothing out south-of-the-border flying problems.

FAA AVIATION NEWS

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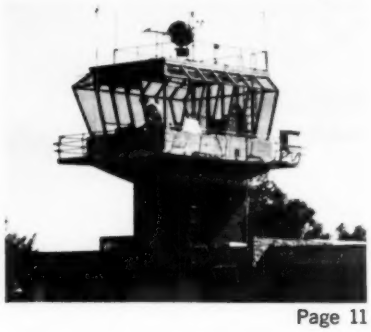

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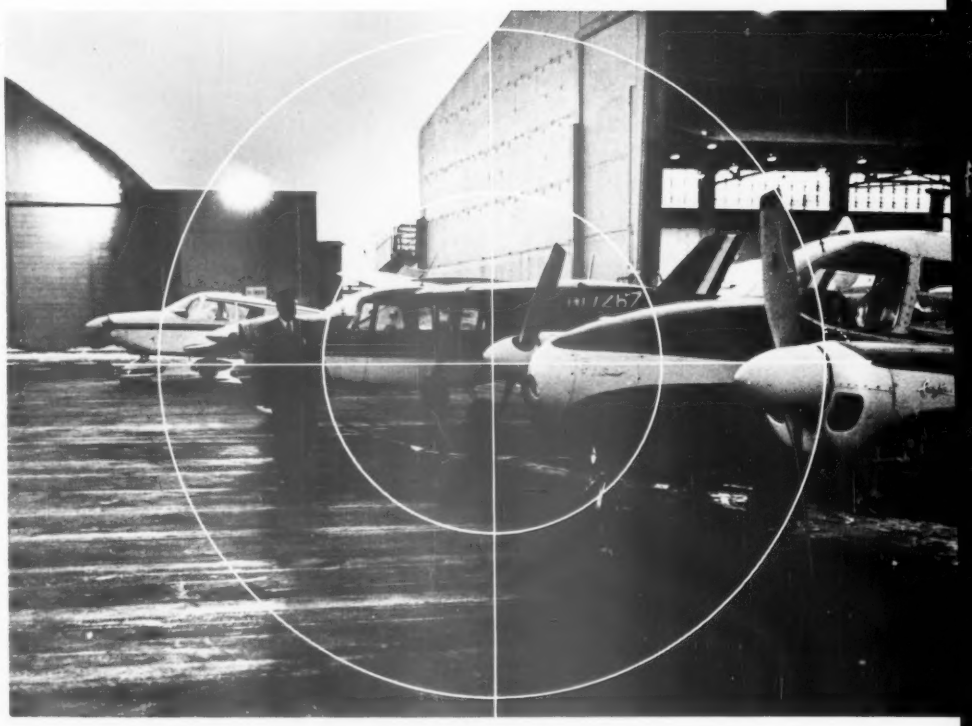
target: YOUR PLANE

With pilferage from aircraft a growing problem, it is best to keep your aircraft in a locked hangar. If this is not practical, tie your plane down in a well-lighted patrolled area whenever possible. Lock it at all times. In making your preflight, check to see that gasoline, radio components and other equipment have not been stolen.



On May 23, 1965, the president of a California construction company, piloting the firm's Aero Commander, left Cable Claremont Airport in the Los Angeles area. His was a VFR day departure, so he did not use his radio before or during takeoff.

While over Palmdale, Calif., he attempted to contact the flight service station but was unable to do so—his radio was out, all the way out. On landing at Bakersfield for a radio check, he was surprised to learn that thieves had stripped away transmitters, navigation units, power supply components and other radio gear concentrated in the baggage area. They had not touched the instrument panel units, indicators and switches leaving the appearance that the radio system was normal. To gain access to the plane, rivets had been drilled off the door hinges. More than $27,000 worth of equipment was taken.

Plane stripping, a national problem, is growing in seriousness. Roy Outcen, FAA general aviation district supervising inspector at Ontario, Calif., made a random check of five of the 48 airports in his area. They reported thefts totaling more than $81,918 in equipment from aircraft since May 1965.

The situation was considered so serious by the State of Idaho that the Idaho legislature passed a law assessing a penalty of not more than $10,000 or imprisonment for not more than 20 years, or both, against anyone who "with reckless disregard for the safety of human life damages . . . tampers with . . . steals from . . . or wrecks any aircraft or functional part of any aircraft." A special fund was set up by Chet Moulton, director of the Idaho Department of Aeronautics, offering a reward of up to $1,000 for information leading to arrest and conviction of such thieves.

Airport thieves have a particular fondness for radios, although thefts of such items as Jeppesen manuals, tail cones and wing tips are not uncommon. At Van Nuys Airport, recently, the entire engine mount, engine, cowling and propellers were stripped off a light plane. In another instance, a large truck was driven down the flight line and every controllable propeller was systematically removed by thieves whom the authorities termed "aircraft experts."

Theft of gasoline is common—and a cause of aviation accidents which occur when drained fuel causes fuel starvation after a pilot neglects to check fuel quantities during preflight and run-up.

"There are thieves who arrive at the scene of accidents to strip aircraft systematically," says J. L. Eddy, supervising inspector of San Diego's general aviation district office. "If a guard has been placed on the aircraft, a person may identify himself and claim to represent the owner or insurance company explaining he has instructions to remove radio equipment, instruments and other components."

What can you do to keep the risk of pilferage to a minimum?

- Although it offers no protection against pilferage, insurance is recommended. To help assure that your loss will be covered, be prepared to supply the insurance adjuster with a list of your equipment, including serial numbers, makes, models, etc.
- Keep your aircraft locked when not in use.
- Tie down in a well-lighted, patrolled area whenever possible. (A locked hangar is, of course, the ideal place.)
- If the aircraft is involved in a forced landing or crash, arrange to keep wreckage guarded until released by CAB or FAA.
- If your aircraft cannot be locked, remove portable radio equipment and other easy-to-carry gear.
- In making your preflight, keep in mind that gasoline, radio components or other equipment might have been stolen. Make the necessary checks.
- Report all instances of pilferage to local authorities giving a complete description of each item stolen.

Continuing vigilance on the part of authorities and pilots, stricter laws and award programs such as that pioneered in Idaho offer some promise of denting the rate of aircraft pilferage.

Stepping up airport security systems and improving airport lighting are other steps being taken to combat the airport felon who threatens every pilot's safety—and his wallet.

Air Taxis: opportunity calling

The rapidly expanding air taxi business proves its versatility in wide range of assignments.

What does an Alaskan fur trapper do when he reaches the end of his trap line with tired sled dogs and an overload of pelts?

He calls a taxi.

Taxis that operate in the fur trapper's bailiwick are a special kind, but they can be found all over the world doing unique jobs. Their cargoes range from baby chicks and reindeer to high paid executives and cannery workers.

These are the "air taxis." They are the fastest growing segment of aviation and one of the Nation's fastest growing businesses. More than 5,000 planes were in the business in 1964, but 13,000 is the forecast for the 1975 period. This will outdo the growth rate of the past six years during which the business has more than doubled in almost every aspect.

Behind this burgeoning growth are the resourceful people who have found new business opportunities and unique uses for aircraft. Amerine Air Service, for example, specializes in transporting millions of turkey eggs and pullets between California production centers and Eastern markets. The service started when national air freight companies decided against installing special equipment to regulate temperature and humidity.

Butler Aircraft in Redmond, Ore., did a booming pre-Christmas business. They made flying reindeer a reality by transporting live reindeer from ranches to cities throughout the country. After they were on display through the Christmas season, they were returned to the ranches.

By providing aerial transport between major air terminals and outlying communities, air taxi operators have tapped one of their largest potentials. Economic studies by FAA's Office of Policy Development show that about 91 per cent of the air taxi flights made between 1958 and 1964 were passenger flights. This is true, at least, of the operators who are members of the National Air Taxi Conference. Although NATC, with only 200 members, represents less than 7 per cent of the 3,026 commercial operators who hold FAA air taxi commercial operator certificates, their growth trends are noteworthy.

From 1958 to 1964, aircraft trips of all types for NATC members increased from 34,000 to 73,450. The average passenger load has climbed from under two to almost three. The revenue aircraft miles increased by 223 per cent in the same time period—from 5.2 million to 16.8 million miles. Revenue *passenger* miles grew 557 per cent—from 8.7 million to 56.9 million.

This new passenger business has been made with the cooperation of, and not at the expense of, scheduled airlines. Major

airlines have recognized the potential of air taxis to serve as "feeders" to major metropolitan terminals. In some cases, trunk airlines are investing their time, effort and money to help air taxis gain firmer roots in the aviation industry.

Travel agents, too, are encouraging passengers to "fly all the way" by using air taxis in place of the combination of trains, buses, airport limousines and taxicabs. In many cases, they claim, it is not only faster but just as economical.

FAA general aviation and flight standards district office staffs are quick to praise air taxi service for its versatility and convenience.

But the passenger business is far from the whole story. Air taxis are getting their fair share of the booming air cargo business. As major airlines streamline cargo hauls, more businesses are becoming aware of the economies and the opportunities involved in transporting valuable and perishable cargo by air. Some are turning to air taxi.

Alaska's salmon industry is an example of a business that depends on the service. Because salmon migrate, fishermen use air taxis to patrol the coastal waters looking for great schools. During fish runs, when every hour counts, air taxis rush workers to the headwaters from their isolated canneries. Many an Alaskan trapper, too, will charter air taxis to haul himself, his dogs, sled and provisions to the distant end of his trap line. He sets a date when he wants to be picked up. If he has been successful, he will board the taxi with thousands of dollars worth of fox, mink, martin, lynx, muskrat, beaver or wolverine.

J. P. Riviere of the FAA stresses the importance of air taxis in the Caribbean.

"Small island towns separated from large cities by vast expanses of water depend heavily on the small operators for their needs and livelihood. Needed articles are flown in while seafood products and small fabricated items are delivered to large cities for sale in market places and hotels. In Puerto Rico itself, isolated mountain communities are reached in a few minutes by air from San Juan, while automobiles would require three hours through congested, twisting mountain roads."

All in all, there are about 9,500 airports in the United States and the trunk and feeder airlines reach about 600 of them with scheduled service. Air taxis have made 7,000 additional communities accessible by air.

Claims Bob Shippee, an official at United Air Lines, "Air taxi is an established segment of transportation—it's come of age. This is no longer the leather jacket era."

Air taxis come in all sizes and shapes and can be found almost everywhere. The Grumman **G-21,** above left, splashes in California waters; the **Beaver,** above right, thrives in Alaska; the de Havilland **Dove,** center, flies tourists through the skies of Hawaii, and the **Aztec** is used by Henry Griffing's family business in Ohio.

These executive jets are used for training at the FAA Academy, Oklahoma City.

The Making of a JET PILOT INSPECTOR

Today's high flying business and corporate pilot is a new breed. He flies a fast, sleek, pressurized jet that may cost from half a million to several million dollars (see *FAA Aviation News*, July 1966). He sometimes keeps to a schedule that would confuse an airline captain. And he files just as many flight plans, listens to just as many weather briefings and must be just as proficient in his flying skill as his airline counterpart.

Similarly, the executive pilot needs training and must be checked out in his new jet aircraft. This task falls to the operations inspector at the local FAA general aviation district office. But, to do this job, the GADO inspector also needs to be checked out and awarded a certificate for the several different types of corporate planes.

This specialized training for GADO inspectors is conducted by the flight standards general operations section's executive aircraft unit at the FAA Academy in Oklahoma City.

What does it take to become typ ted in an executive jet? "Surprisingly enough, no previous jet time is needed," says Eugene L. Anderson, one of a staff of eight Agency instructors who see to it that GADO inspectors are qualified to fly several types of corporate aircraft. He pointed out that the jets are not difficult to fly, but that sometimes a pilot will find himself "riding the tail." In other words, he has let the airplane get ahead of him. But this is easy to do in a plane that moves right along at 40,000 feet at about Mach .8—close to supersonic.

The best qualification a man can bring to the FAA training course is that he be a highly proficient pilot, particularly on instruments. He must be a pilot's pilot, one who loves to fly and who needs to know all the answers to all the questions about his aircraft. The initial Oklahoma City training course for a type rating for FAA GADO inspectors includes 160 hours of hard but enjoyable work. Each man receives 40 hours in the air—20 as a pilot and 20 as a copilot or observer.

The course also includes 16 hours of ground school and "flight" time in the Link trainer, 15 hours of pre- and post-flight briefing and an eight-hour flight physiology lecture followed by a "ride" in the high altitude chamber. The chamber is used to familiarize a pilot with proper oxygen utilization and the reaction of the human body to the lack or complete absence of oxygen.

Jet pilot S. E. Thomas, left, is about to be checked out by instructor Eugene L. Anderson.

The balance of the course involves ground school study of aircraft systems—hydraulic, electrical, engine and control—interspersed with flight test procedures, aircraft performance, flight planning, high altitude meteorology and weight-and-balance.

As the sales of executive jets increase each year, more corporate pilots will be seeking type ratings. This means GADO inspectors (37 are qualified in turbo-jets; 18 in turbo prop) must be kept qualified. So, in subsequent years, pilots who are type rated or qualified in jets go through a 48-hour (six day) course twice a year. Within a 12-month period each pilot receives 25 hours of flight time, seven hours of Link instruction, 12 hours of ground school and four hours lecture on pre- and post-flight briefing.

LITTLE AIRPORT, BIG SAVE

Interesting things keep happening to Joe Goldstein, a stocky, genial, 41-year-old bundle of energy who has a knack for making things come out right.

Take last Labor Day weekend when he and his neighbor stood in the early dusk discussing the newly installed runway lights bordering the 1,650-foot asphalt strip on his farm at Prince Frederick, Md. Tested frequently during installation by the contractor, the lights were as yet untried by Goldstein.

Click, on went the lights. Swoop, down through the night sky came a Cessna 172 *Skymaster* for an emergency landing. The pilot, en route from Atlantic City to Washington, D.C., with his wife, two children and the family dog aboard, had been overtaken by nightfall and was lost. The pilot had never before flown after dark. Goldstein helped out by slipping a lighted landing field under him.

Flying since he was 16, Joseph I. Goldstein is a man in motion—on land, on the water and in the air. He owns and operates a Cessna *Skymaster* and a Bell G-4 helicopter which he keeps hangared in a converted tobacco barn on his 800-acre farm bordering the Patuxent River some 35 miles southeast of Washington. The completely instrumented *Skymaster* is used for longer trips; the helicopter sees almost daily service, weather permitting, as a commuter vehicle. Goldstein estimates he gets about 250 "useful" days a year out of the chopper.

While his ground-bound neighbors chug along bumper to bumper headed for a day's work in the Capital, Joe rises above the situation. Relaxed in his 'copter, he clatters from home to Washington with an en route stop at Marshall Hall Amusement Park, one of the oldest and largest enterprises of its kind in the U.S. The stop is not for fun and games, which abound, but business. He's president of the corporation and his staff has a batch of president-sized problems awaiting his decisions.

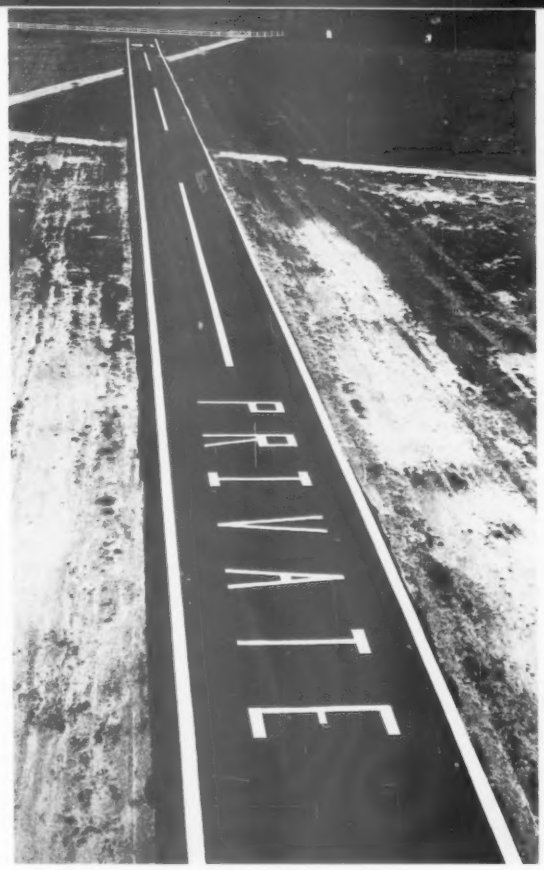
Aloft again, he sets course for Washington National Airport. Here a car will pick him up and wisk him to Pier 4 on the Potomac, where he dons the skipper's cap as president of Wilson Line of Washington, Inc. Last year his seven-vessel fleet, headed by the 200-foot-long, 3,000-passenger motor ship *George Washington*, carried some 600,000 excursionists on cruises to Mount Vernon and other points on the Potomac. This makes his line one of the largest passenger-carrying shipping companies in the nation.

Joe Goldstein's private airport is a miniature of the full-scale article. Not only is his runway paved and lighted, it also has a white strip down the center and each end is marked with accurate magnetic headings. Prominently displayed in the center, in 12-foot white letters, is the word "Private." Not that Joe objects to visitors dropping in—he merely puts everyone on public notice that landing on his place implies no liability on his part. Both ends of the runway have semicircular paved turn-around areas. Supplementing the paved NW-SE strip is an E-W turf strip of 1,800 feet.

Joe's wife, Shirley, is an accomplished artist and horticulturist, but one who prefers the turf. She and their 15-year-old daughter, Debbie, are horse fanciers. Eleven-year-old Jon, on the other hand, never misses a chance to scamper aboard whichever of his father's planes, boats or horses is heading for where the action is.

Unlike his brother Louis Goldstein, who was recently re-elected comptroller of the State of Maryland, Joe has no political aspirations—at the moment or in the near future. He's too wrapped up in business and continuing his romance with an old flame, aviation. Right now he's doing a lot of talking about a jet helicopter, and when Joe Goldstein talks, he generally means business.

By Frank J. Clifford



This was a welcome sight to wayfaring family.

Joe Goldstein uses **Skymaster** for long jaunts but Bell **G-4** gets daily workout run to work.

is your altim

In affairs of the heart, a little white lie sometimes is the most fluent language of love. What's the harm in exaggerating a charm or softpedaling a flaw? Not so with altimeters. The altimeter is your margin of safety and nothing less than the absolute truth, under all circumstances, is acceptable.

Yet the truth is not so easy to come by. Of 2,349 altimeters tested during a two-month period last year, 1,477, or 62 per cent, were inaccurate. It was just as bad with the static system that permits the altimeter to function. Of 1,491 aircraft static systems tested, 911, or 54 per cent, had flaws.

These eyebrow-raising figures came to light when aircraft owners moved to comply with FAA instructions that all general aviation craft would have their altimeters and static systems inspected by Aug. 1 of last year. Because of valid industry objections—a shortage of altimeters to replace defective ones and the difficulty faced by owners in locating and then flying their planes to an FAA-certificated mechanic or approved repair station. The FARs now require that aircraft flown under IFR in controlled airspace have their altimeter and static systems tested or calibrated once every two years starting Aug. 1, 1967, or the first annual inspection after July 31, 1967.

Mechanics probing the static system for leaks uncovered all manner of ailments from loose "B" nuts to unconnected lines. Static lines were worn in half. They were broken and kinked, and had cracked flares or cracked plastic "B" nuts. They had loose or faulty static ports, leakage of other instruments (rate of climb, airspeed, etc.), problems with plastic lines, lines corroded, poor or no maintenance and manufacturing errors.

Mechanics flunked altimeters because they were found to be out of calibration and had leaking cases, stuck needles and sluggish internal mechanism. Many suffered from general neglect. Some had not been checked in 15 years.

How about pilots? What does the average pilot know about his altimeter? Can he read it fast and accurately at the first glance, even under adverse lighting conditions? How many actually know what goes on in the dark recesses behind the instrument's face?

Does "indicated" altitude mean anything to you? How about "pressure" altitude? "True" altitude? "Density" altitude?

Indicated altitude is read directly from the altimeter—uncorrected—after it is set to the current altimeter setting. Pressure altitude is the altitude read from the altimeter when the setting window is adjusted to 29.92. This altitude is used for computer solutions for density altitude, true altitude, true airspeed, etc.

True altitude is the actual height of the aircraft above sea level. Often the true altitude is expressed in this manner: "10,900 feet MSL"—the MSL standing for mean sea level. Remember that airport, terrain and obstacle elevations found on charts and maps are *true* altitudes.

Density altitude is pressure altitude corrected for nonstandard temperature variations and is directly related to the aircraft's takeoff and climb performance.

The altimeter operates on the basic principle that air is more dense at the surface of the earth than aloft. The barometric altimeter responds to the difference in pressure at various levels and reflects the difference in feet on the face of a dial. The altimeter, along with the air speed indicator and the vertical speed indicators, derives its "input" from the pitot static system.

During the preflight inspection, both the pitot tube and the static vents should be checked for obstructions. Clogged or partially obstructed openings can cause inaccurate instrument readings. Cleaning them out is a job for a mechanic. Do not blow into these openings as this can damage all three instruments—the altimeter, the air speed indicator and the rate-of-climb indicator.

Atmospheric pressure and temperature vary continuously. Rarely is the pressure at sea level 29.92 inches of mercury or the temperature exactly 15 degrees Centigrade (standard sea level conditions). This being the case, altimeters are adjustable to accommodate nonstandard pressure.

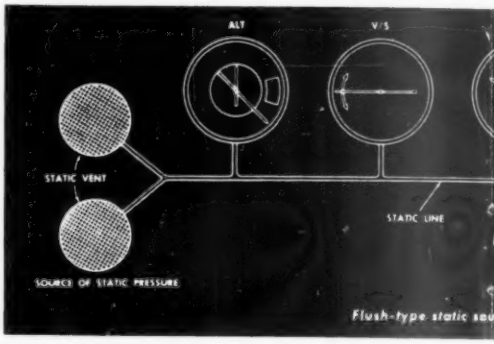
On a warm day the expanded air is lighter in weight per unit volume than on a cold day, and the pressure levels are raised. For example, the pressure level where the altimeter indicates 10,000 feet will be *higher* on a warm day than under standard conditions. On a cold day the reverse is true and the 10,000-foot level would be *lower*. The adjustment made by the pilot to compensate for nonstandard *pressures* does not compensate for nonstandard *temperatures*. Therefore, if terrain or obstacle clearance is a factor in the selection of cruising altitude, particularly at higher altitudes, remember that *colder-than-standard* temperature will place the aircraft *lower* than the altimeter indicates.

Most altimeters are equipped with an altimeter setting knob and window (sometimes referred to as the Kollsman window) which gives the pilot a way to adjust his altimeter for the atmospheric pressure variations mentioned above. FAA regulations provide the following concerning altimeter settings:

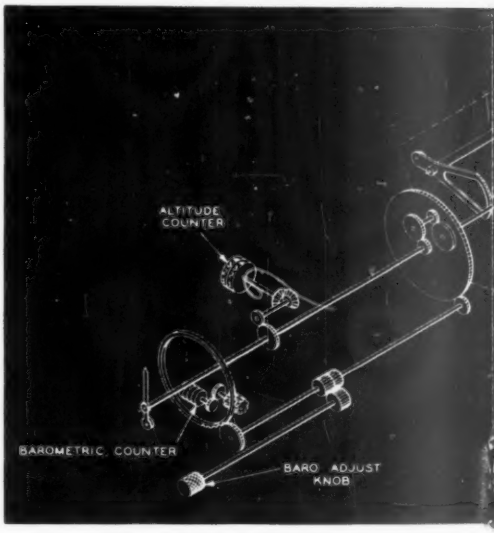
The cruising altitude of an aircraft at or below 18,000 feet MSL shall be maintained by reference to an altimeter *which shall be set to the currently reported altimeter setting of a station along the route of flight within 100 nautical miles.* Remember, the pilot cruises at an indicated altitude (current altimeter setting). If there is no station, the current reported altimeter setting of an appropriate available station shall be used. In an aircraft having no radio, the altimeter shall be set to the elevation of the point of departure or the appropriate departure airport altimeter setting shall be used.

Many pilots confidently expect that the current altimeter setting will compensate for irregularities in atmospheric pressure at all altitudes. Unfortunately, this is not always true. Remember that the altimeter setting broadcast by ground stations is the *station pressure corrected to mean sea level.* The altim-

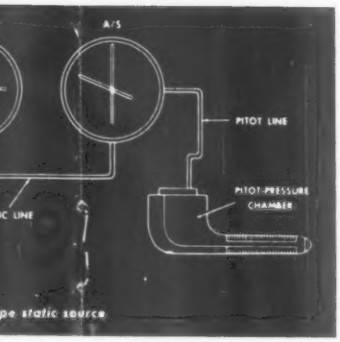
Schematic of pitot-static system shows simplicity of hook-up. Pitot and static vents must be kept clean.

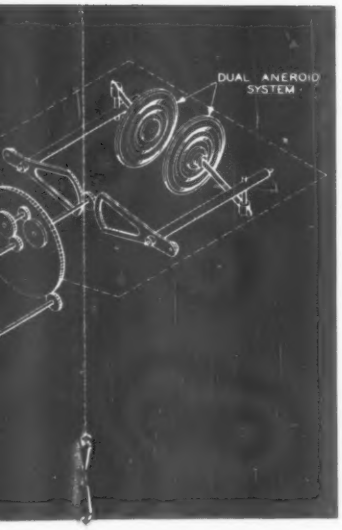


Altimeters have reached a fine state of development as this "inside" view of a counter-pointer altimeter shows.



ltimeter a liar?





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eter setting does not account for distortion at higher levels, particularly the effect of non-standard temperature.

When flying over high mountainous terrain, certain atmospheric conditions could cause your altimeter to indicate an altitude of 1,000 feet or more *higher* than you actually are. Allow for a generous margin of altitude—not only for possible altimeter error, but also for possible downdrafts which are particularly prevalent if high winds are encountered.

(FAA regulations require a buffer zone of 1,000 feet at all minimum en route altitudes (MEA) over the highest part of normal terrain and 2,000 feet above mountainous terrain).

As an illustration of the use of the altimeter setting system, let's follow a flight from Love Field, Dallas, to Abilene Municipal Airport at Abilene, Texas, via the Mineral Wells VOR. Before takeoff, the pilot receives a current altimeter setting of 29.85 from the control tower. He applies this setting to the altimeter's setting window. He then compares the indication of his altimeter with the known field elevation of 485 feet. If his altimeter is perfectly calibrated, the altimeter should indicate the field elevation of 485 feet.

(However, since most airports are not perfectly flat, an indication of plus or minus 75 feet is generally considered acceptable. If an altimeter indication is off more than 75 feet, the instrument should be recalibrated by an instrument technician).

When the pilot is over the Mineral Wells VOR, he makes a position report to the Mineral Wells flight service station. He receives a current altimeter setting of 29.94, which he applies to the altimeter setting window of his altimeter. Before entering the traffic pattern at Abilene, he receives a new altimeter setting of 29.69 along with other landing instructions.

Since he desires to fly the traffic pattern at approximately 800 feet above terrain—the field elevation at Abilene is 1,778 feet—he maintains an indicated altitude of approximately 2,600 feet. Upon landing, his altimeter should indicate the field elevation of the Abilene airport, 1,778 feet.

Let's assume that the pilot neglected to adjust his altimeter at Abilene to the current setting. His traffic pattern would have been approximately 250 feet *below* the proper traffic pattern altitude, and his altimeter would have indicated approximately 250 feet more than the field elevation upon landing.

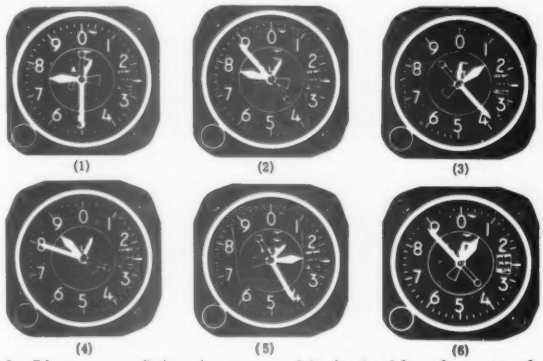
Actual Setting....29.94 inches Hg (mercury)
Proper Setting....29.69 inches Hg
At sea level .25 (1 inch Hg = 1,000 ft.)
.25 × 1,000 feet = 250 feet.

The importance of properly setting and reading the altimeter cannot be overrated.

test your altimeter knowledge

Take this short quiz on altimetry. Grade yourself by checking the answers that follow.

1. Check your ability to quickly interpret your altitude by jotting down the readings of the following six altimeters. Allow yourself one minute.



2. If you are flying in very cold air (colder than standard temperatures), you should expect your altimeter to read
   a) *higher* than your actual altitude above sea level.
   b) *lower* than your actual altitude above sea level.
   c) *the same* as your actual altitude above sea level.

3. Assume that your proposed route crosses mountains with peaks extending to 10,900 feet above sea level. Prior to crossing this range, you adjust the altimeter setting window of your altimeter to the *current altimeter setting* reported by the flight service station located in a valley near the base of this mountain range. If you maintain an indicated altitude of 11,500 feet by your altimeter, *can you be assured of at least 500 feet vertical clearance of these mountain peaks?*

Answers to Questions on Altimetry

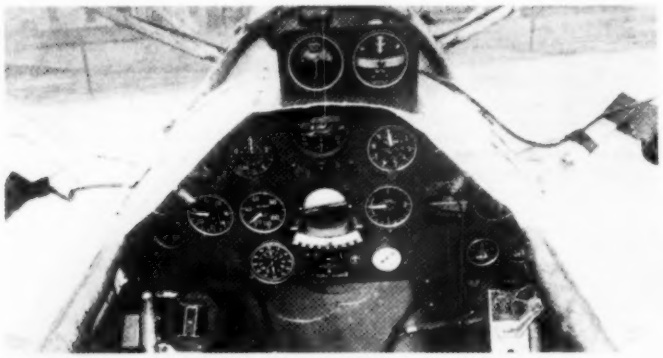
1. 1) 7,500 feet. 2) 7,880 feet. 3) 1,380 feet. 4) 8,800 feet. 5) 12,420 feet. 6) 880 feet. If your altimeter is the sensitive three-pointer-type such as those pictured, an orderly approach to reading your altimeter is to first glance at the smallest hand (10,000-foot hand); next read the middle hand (1,000-foot hand); and last, read the large hand (100-foot hand). For the two-pointer altimeter, simply read the small hand first and the large hand next.

2. If you are flying in cold air, you should expect your altimeter to indicate higher than you actually are. If you are flying from a high pressure area to a low pressure area or into cooler air, you aren't as high as you think—assuming, of course, that compensations have not been made for these atmospheric conditions.

3. No, you are not assured of 500 feet vertical clearance with these mountains. As a matter of fact, with certain atmospheric conditions, you might very well be 500 feet *below* the peaks with this indicated altitude. Five hundred feet is hardly an adequate separation margin to allow on flights over mountainous terrain—1,500 to 2,000 feet is recommended in order to allow for possible altitude errors and downdrafts.

famous

FLIGHTS



This instrument panel opened a new era of flight.

Jimmy Doolittle. Photo credits: The Smithsonian Institution.

JIMMY DOOLITTLE

the first instrumentalist

In 1928, most pilots still flew by the seat of their pants and showed little disposition to change. James H. (Jimmy) Doolittle was an exception. He believed instrument flight was the key to expanded aviation horizons, and he would demonstrate his point in a most dramatic and effective fashion.

Doolittle, who would later lead the first World War II bombing raid on Tokyo, was a first lieutenant in the Army Air Corps at the time. An accomplished aviator with a number of record flights to his credit, he was also a highly respected aeronautical engineer, holding a doctor of science degree in that subject from the Massachusetts Institute of Technology.

His unique qualifications caught the attention of Harry Guggenheim, president of the Guggenheim Fund for the Promotion of Aeronautics. When the Fund decided to undertake an intensive investigation of the problems connected with flying in fog, Guggenheim requested the Air Corps to grant Doolittle a leave of absence to head the newly established Full Flight Laboratory at Mitchel Field, Long Island, N.Y. This was in August 1928 when Doolittle was 31.

One of Doolittle's first acts was to purchase a rugged Consolidated NY-2 military training aircraft. It was delivered in early November 1928, and Doolittle began making preliminary practice flights to determine the aircraft's "blind" landing capability. These tests showed that considerable improvements in instrumentation had to be made before such landings would be possible.

Two major problem areas were the magnetic compass and the turn-and-bank indicator. Neither instrument was adaptable to blind flying techniques. What was needed was an accurate and reliable instrument which would show the aircraft's exact heading and precise attitude at all times during approach and landing.

Doolittle enlisted the aid of Elmer Sperry, Sr., founder and president of the Sperry Gyroscope Company, who put his son, Elmer, Jr., to work on the project. The result was the Sperry Artificial Horizon and the Sperry Directional Gyroscope, the descendants of which are still standard equipment on all U.S. airline and military aircraft.

But Doolittle still needed an instrument which would provide exact altitude readings. The crude barometric altimeters then in use provided only approximate readings—to the nearest 50 to 100 feet at the very best—making them totally unsuitable for instrument landings.

Doolittle heard about a young man named Paul Kollsman who had developed a highly sensitive barometric altimeter which would accurately measure altitude to within a few feet of the ground. He ran some flight tests with the instrument and found that it performed perfectly. It was subsequently installed in the NY-2.

On Sept. 24, 1929, Doolittle and his associates were ready for an "official" under-the-hood blind landing attempt in the NY-2. Doolittle would pilot the aircraft from the rear cockpit which was completely shrouded with a canvas cover. Lt. Ben Kelsey, another Air Corps officer assigned to the Full Flight Laboratory, would sit in the front cockpit and act as "safety" pilot.

Doolittle has written his own description of that famous flight:

"... I taxied the airplane out and turned into the takeoff direction on the radio beam. We took off and flew west in a gradual climb. At about 1,000 feet the airplane was leveled off and a 180 degree turn was made to the left. This course was flown several miles and another 180 degree turn to the left was made. The airplane was lined up on the left of the radio range located on the west side of Mitchel Field, and a gradual descent started. I leveled off at 200 feet above the ground and flew at this altitude until the fan beacon on the east side of the airfield was passed. From this point the airplane was flown into the ground, using the instrument landing procedure previously developed. Actually, despite previous practice, the final approach and landing were sloppy . . . The flight from takeoff to landing lasted 15 minutes. It was the first time an airplane had been taken off, flown over a set course, and landed by instruments alone."

The following day publications like *The New York Times* hailed the flight as a "great advance" in air safety. Doolittle, himself, was more conservative. He realized that much work remained to be done before instrument landings were a practical reality. But a beginning had been made.

Doolittle had shown the way, and others would follow. *By John Leyden*

Hands Across the Border

unravel red tape

Hermosillo's modern airport provided the gateway into Mexico.

Above, FAA's Robert V. Reynolds, right, chatting with Mexican pilots, and Mexico's Ramon Perez Morquecho, left, headed their nation's delegations to a hands-across-the-border conference at Hermosillo, Sonora, Mexico.

Planning a flight down Mexico way? Then you'll be glad to know that problems of south-of-the-border flying are getting international attention—and some of these problems are being ironed out.

Recently, U.S. officials met with their Mexican government counterparts and pilots of both nations in a hands-across-the-border discussion of mutual problems. The meet was held at Hermosillo, Sonora, Mexico.

Mexico's Director General of Civil Aeronautics, Ramon Perez Morquecho, headed the Mexican delegation.

The American delegation to the Hermosillo "Hangar Session" was headed by Robert V. Reynolds, FAA's assistant administrator for general aviation affairs. Also in the American group was Henry Newman, director of the FAA's Southwest Region, and Lee Warren, deputy director of the Western Region.

During the bilingual hangar session, Mexican and U.S. pilots got direct answers to questions on international travel via light aircraft.

These points of interest to U.S. pilots who plan to fly in Mexico were revealed at the meet:

- Mexico is engaged in a concerted program to improve navigational aids. By the time the Olympic Games open in 1968, Mexico hopes to have 32 new VORs, nine new nondirectional beacons and six new DME stations.
- Mexico plans to construct six additional modern air traffic control centers at strategic locations. The nation has only one now—in Mexico City.
- Recognizing that Baja, Calif., is one of the most favored Mexican tourist areas, Mexican officials plan to give priorities to installation of communications and navigational aids there.
- A new general aviation airport for Mexico City, with hotel and motel accommodations, restaurants, customs and immigration and maintenance service, is expected to be ready by the opening of the Olympics.
- A rural airport plan to aid private pilots is being worked out by Mexican government officials.
- Mexican officials pledged that they will work on unravelling red tape associated with flying in that country. Fees will be posted publicly at all airports. Mexican customs officials will do their best to provide better and more hours of service to U.S. pilots flying across the border and an effort will be made to eliminate overtime charges.
- Mexico is exploring plans to declare all airports as ports of entry from any U.S. point of departure.
- Efforts will be made to expedite import permits on spare parts for aircraft and to see what can be done about the objectionable 2 per cent import tax on parts.

The problems of Mexican pilots who fly north were not ignored. Questions concerning U.S. regulations, permits and procedures were answered by American representatives. Changes which would benefit Mexican pilots are being explored on this side of the border. Under one such change, qualified Mexican pilots would be granted full U.S. pilot certificates instead of "special purpose permits."

For American participants, meeting and mingling with Mexican officials and with pilots of both nations did much to cement goodwill and create greater international understanding. And the outcome is sure to benefit general aviation pilots of both countries.

PROPOSED 'BASIC PILOT' TICKET, MORE HOURS FOR PRIVATE, COMMERCIAL

To improve the skills and proficiency of pilots and promote greater safety in aviation, the Federal Aviation Agency has proposed a new "basic pilot" certificate and more training for future private and commercial pilot licenses. Existing pilot licenses would not be affected.

The basic pilot certificate would require less training and experience than is now required for a private pilot certificate and would allow the pilot to carry passengers on flights. To carry passengers under present rules, a pilot must have at least a private pilot certificate.

The FAA proposal also would raise private pilot certification requirements for flight training and experience from 40 to 75 hours. The additional 35 hours would be devoted to more airborne training under the supervision of FAA-licensed flight instructors.

For the commercial pilot certificate, the proposal would require 250 hours of flight experience—50 hours more than presently needed. In addition, an instrument rating would be required for the commercial license. Under present rules only limited instrument training is required for a commercial license and at least 60 hours of such training is required for an instrument rating.

Under the proposal, the up-grading of private pilot requirements could, with careful planning of flight and ground training, result in the private pilot being eligible for an instrument rating with no additional flight time. Present regulations require private pilots to have at least 200 flight hours before applying for an instrument rating.

It is felt that raising private and commercial pilot requirements, as proposed, is necessary in order to bring piloting skills and techniques up to a level more nearly commensurate with the demands of today's more complex, high performance planes. Existing regulations are based on the characteristics of airplanes developed more than a decade ago.

The proposed rules also are tailored to fit typical flight operations of today, providing more familiarity with night operations, flight instruments, cross-country flying over longer distances and such sophisticated aircraft features as retractable landing gear, controllable-pitch propellers and flaps.

The basic pilot certificate, intended to satisfy the modest needs of pilots who want to fly primarily for pleasure, would limit such pilots, when carrying passengers, to operating relatively simple types of planes having nonretractable landing gear, fixed rather than variable-pitch propellers, no flaps and minimum stalling speeds of not more than 60 miles per hour. Moreover, basic pilots would be permitted to fly only during daylight hours when cloud ceilings are at least 1,000 feet above the ground and visibility is at least five miles.

Young pilots, like these two 16-year-old identical twins, would qualify for a basic pilot certificate when their flight instructor determined they were sufficiently competent under FAA's new proposal. Here the girls, Robin, left, and Carol Morrison, Fayetteville, N.C., get their slips snipped in lieu of having their shirt-tails cut to celebrate their first solo flight. Their father, Robert Morrison, snips Robin's slip while the instructor, James Starling, Fayetteville, performs the ritual for Carol.

The basic pilot would not be allowed to operate aircraft for hire or compensation. A pilot holding the basic certificate would, however, be permitted to operate more sophisticated planes, without passengers, if he were checked out and certified in that type of airplane by a flight instructor.

Except for five hours of cross-country solo flying, no minimum amount of flight time is specified for the basic pilot certificate. Instead, responsibility for licensing the pilot would rest with the pilot's flight instructor who would determine when the student has attained sufficient competence in flight maneuvers and other knowledge and skill requirements. It is expected that about 35 hours of flight training and experience would be sufficient to qualify most applicants for the basic pilot certificate.

The proposal would not alter current requirements for the student pilot certificate which must be obtained before the student can operate an aircraft in solo flight.

Comments on the proposal (Notice 67-1; Docket 7858) should be submitted by April 13, 1967, to FAA Rules Docket, 800 Independence Ave. S.W., Washington, D. C. 20553.

PILOT CERTIFICATE REQUIREMENTS

(Flight Instruction)

	BASIC	PRIVATE	COMMERCIAL
Present Requirements	NONE	40 hrs. total flight instruction: 20 hrs solo (15 in airplane; 5 in simulator). 10 hrs solo X/C (each flight landing more than 25 miles from departure point). 1 flight of 100 miles with landing. 3 hrs dual after first solo X/C. 3 hrs flight instruction from certificated flight instructor.	200 hrs flight time: 100 hrs in powered aircraft (15 solo). 100 hrs as pilot in command (PIC), including 50 hrs PIC on X/C. 10 hrs dual instruction. 10 hrs dual instruction in preparation for flight test within preceding 6 months. 5 hrs solo night time, with 10 takeoffs and landings. 10 hrs instrument instruction.
Proposed Requirements	5 hrs X/C No minimum total required beyond 5 hr X/C. Licensing is at instructor's judgment. Restriction: daylight flying only; no flying for hire; wx restrictions.	75 hrs total flight time: 30 hrs flight instruction. 20 hrs ground instruction from certificated instructor (15 hrs in ground simulator). 25 hrs solo in airplane.	250 hrs total flight time: 100 hrs PIC (at least 50 in airplane). 10 hrs night flight at PIC. 10 takeoffs and landings. 50 hrs X/C as PIC with landing. 300 miles from point of departure. 50 hrs instruction in ground trainer by certificated instructor. Instrument rating required.

Parachuting Rules Will Guard Both Jumpers and Aircraft

New FAA parachuting rules to provide additional safeguards for both jumpers and airplanes will take effect March 24, 1967.

The new safety regulations require jump aircraft to have two-way voice radio communicating equipment whenever jumping operations are to be conducted in controlled airspace. (Controlled airspace includes all areas which come under the jurisdiction of air traffic control facilities.)

Monitor Continuously

Pilots of jump aircraft will be required to monitor continuously FAA air traffic control or flight service station radio voice channels beginning not less than five minutes before jumping starts.

By listening to the nearest Federal Aviation Agency facility, the pilot of the jump plane and the FAA's air traffic personnel will be able to quickly relay information on other aircraft and receive messages on the progress of jump activities.

The two-way radio equipment requirement may be waived by the local air traffic control authority if it is determined that other methods of communicating, such as by telephone or other air-to-ground radio channels, serve the purpose.

Although current regulations call for six hour prior notification of jump activities in controlled airspace, the new rules require only one hour advance notice.

Originally, it had been proposed that an air traffic control authorization would be required for jumping activities in all controlled airspace. The final rule, however, does not require such an authorization.

Current rules, which will remain in effect, require authorization only for jumps in the control zones of airports with control towers and in the airspace above 24,000 feet which is designated "positive control airspace."

One Hour Notification

The new rules also require that FAA be notified at least one hour before jumping is started in uncontrolled airspace. Current rules require only the consent of the local airport manager. In recent years, the number of flights operating in such "off-airways" airspace have increased substantially.

Provisions also are made in the new rules for accommodating long term, scheduled jumping in very active jump areas.

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A two-part amendment to the Federal Aviation Regulations will provide, effective May 1, 1967, for instant licensing of student pilot applicants and drop the parental consent requirement for minors.

One amendment authorizes aviation medical examiners to issue, on the spot, a combination medical and student pilot certificate when the applicant passes the required pilot's physical examination.

The charge will speed student pilot certification by eliminating travel and correspondence by the applicant and administrative work by the FAA. In effect, student pilot licensing can become a one-stop, one-application process. If an applicant prefers, he may follow the existing certification process by obtaining the medical certificate in the usual manner and then apply for a student pilot certificate to a Federal Aviation Agency inspector, a designated pilot examiner or a district office.

The other change deletes the requirement for written consent of a parent or, in the case of a married woman, her husband, for applicants under 21 years of age. The 16-year minimum age requirement for a student pilot's license was not changed.

It was felt that the parental consent requirement imposed an unnecessary burden on young applicants and served no realistic safety purpose. In support of the change, it was noted that persons under 21 are inducted into the armed forces, can exercise property rights, enter wedlock and are permitted to obtain a driver's license without parental consent in many states.

The changes amend Parts 61 and 183 of the Federal Aviation Regulations.

New Answering System to Expedite Service at FSS

Left, telephone company official, William Wood, points to the circuitry that operates the prototype automatic telephone answering system at the Washington National Airport Flight Service Station.

A new telephone answering system which will speed service to pilots will soon be installed at some of the nation's busiest flight service stations (FSSs).

Designed to provide a simplified, instantaneous telephone answering system for busy FSSs, the new equipment automatically guarantees "first come, first served" response to all callers.

By phoning a FSS, a pilot can file a flight plan and obtain preflight briefings, weather forecasts, airport advisories, emergency assistance and other aeronautical information.

A prototype of the automatic telephone answering system is now in operation at the FSS at Washington National Airport. Incoming calls come into the FSS over 10 telephone lines from Washington, D. C., Baltimore, Gaithersburg, Md., and Manassas, Va. When the six FSS specialists on duty are busy with other calls, a recorded announcement notifies the caller that his call has been received and will be answered as soon as possible. In the meantime, a logic circuit in the answering system automatically aligns waiting calls so that they will be answered in the same order they were received.

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BRIEFS

• AN EXPERIMENTAL CONTROL WHEEL designed to reduce pilot burden on low approaches is being evaluated by the FAA in its Convair 880. Testing is being performed in connection with Category III landings. Called the "command post" in pilot's jargon, the wheel, developed by Lear Siegler, can control all the autopilot modes—engage glide slope, localizer, altitude hold, auto-throttles, heading select, heading hold, yaw damper, pitch and roll servo. Centralized location of the buttons, which light up like those on a plane when in use, eliminates scattered locations encountered in standard installations and contributes to safety by making all buttons not only readily accessible but fully visible at a glance.

• FAA PUBLICATIONS on sale from the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402, includes FAA Air Traffic Activity, Fiscal Year 1966, $1; Flight Engineer Examination Guide(AC 63-1), 30 cents; Flight Navigator Written Examination Guide (AC 63-2), 25 cents; Instrument Flying Handbook (AC 61-27), $1.75. Advisory Circular Checklist (AC 00-2G) may be had free on request by sending a self-addressed mailing label to Federal Aviation Agency, HQ-438,800 Independence Ave., S.W., Washington, D. C. 20553

• BY THE END OF 1967 the FAA expects to have 23 airports fully equipped for Category II operations. Currently equipped and approved are Dulles International, Oakland, Calif., Pittsburgh and Denver. Category II permits landings when the pilot is able to see the runway lights or the runway itself when his plane is 100 feet or more above the landing strip. In addition, horizontal visibility near the point of touchdown may be as low as 1,200 feet. Horizontal visibility, called runway visual range (RVR), is determined by a very accurate photo-electric measuring device. RVR value is instantaneously displayed in the control tower. Additional airport equipment needed for Category II minimums includes a standard ILS (instrument landing system); high intensity approach lights with sequenced flashers; high intensity runway edge lights; touchdown zone and centerline lighting on the runway; and all-weather runway markings.

• FLIGHT INSTRUCTORS formed a new professional group, the National Association of Flight Instructors, during the recent National Aviation Trades Association meeting in Las Vegas. The 135-man organization has a goal of 1,000 members by the end of the year. President is Raymond Lanham, Indianapolis. Henry S. Hubbell, chief of FAA's General Aviation Operations Branch, was appointed special FAA technical advisor to the organization's board of directors. Inquiries should be sent to National Association of Flight Instructors, 1346 Connecticut Ave., N.W., Washington, D. C. 20036.

$72.5 Million in FAAP Matching Funds Goes to 341 Airports

Allocations of $72.5 million in Federal matching funds to help local communities construct and improve 341 civil airports under the Federal-Aid Airport Program for Fiscal Year 1967 have been announced by the Federal Aviation Agency.

The 1967 program provides $59.2 million to improve 295 existing airports and $13.3 million to construct 46 new airports. Emphasis is placed upon airport development to relieve traffic congestion at major air terminals and to provide runways needed by communities to accommodate jets and other modern aircraft.

For General Aviation

The program includes:

• Development at 118 locations serving general aviation exclusively.

• Construction or improvement of airports at 43 locations to relieve congestion at major air terminals and serve general aviation in congested areas.

• Providing additional facilities at 55 locations which have published point-to-point air taxi service and rates.

Public acceptance of air transportation and need for airport development produced an unprecedented number of requests for aid (731 requests totaling $274.1 million). Because of the amount requested, FAA has limited the program to urgently needed development where local financing will permit early commencement of work. Many requests involving necessary work had to be deferred for future consideration by communities and the FAA.

Allocations are based on use of $61 million of the $71 million appropriated by Congress for the fiscal year beginning next July 1, and $11.5 million carried over from previous years. Federal funds will match those provided by local project sponsors, generally on a 50-50 basis. Additional aid from the Appalachian Regional Commission is anticipated by 10 communities receiving allocations for development in the Appalachia region.

Landing Facilities

Landing facilities will be improved as follows:

• Runway extensions at 86 locations to accommodate larger aircraft, including 35 airports served by local service airlines.

• New runways at 84 airports to improve the safety and efficiency of flight operations and increase airport capacity.

• Improved safety at 154 locations acquiring land for clear zones at the ends of runways.

• Gold Seal Inquiry

I have heard of the FAA Gold Seal program to recognize flight instructors with advanced qualifications. I should very much appreciate receiving further information on this and any literature that may be available.

Greenwich, Conn.

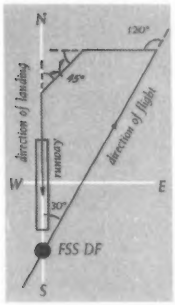
The Gold Seal flight instructor program is designed to encourage flight instructors to improve their own qualifications voluntarily and to provide a certain mark of distinction for active instructors with special qualifications.

Advisory Circular 61-35, Gold Seal Flight Instructor Certificates, is available without charge from FAA, HQ-438, Washington, D.C. 20553, with a self-addressed mailing label.

• Doppler DF Fix Needed

I enjoyed your excellent article, "Lost, No Sweat," in the January 1967 *Aviation News* but I am a bit confused on the directions and diagram on how the triangular approach is to be flown.

Scranton, Pa.



You have a right to be confused. Existing DF procedures utilize a teardrop procedure turn. However, the FAA has a new triangular pattern "in the works" which will be flown as indicated in th revised diagram Basically, the aircraft is brought in over the DF antenna. After station passage is received, the aircraft is turned to a heading that is 30 degrees of divergence from the reciprocal of the final approach course. After three minutes a turn is provided which will intercept the final approach course at 90 degrees (base leg). When the aircraft is approximately 10 degrees from the final approach course, two 45-degree turns are provided to establish the aircraft inbound on the final approach.

• Ditching Will Make It So

Can a light plane with a high wing and fixed tricycle gear such as a Cessna 172 be ditched without overturning? What is the safest procedure if ditching should become necessary?

Name withheld

Yes, a light plane can *be ditched without overturning, but there are too many variables to make it possible to recommend just one procedure. On a lake, an into-the-wind full stall landing is normally suggested. However, if the surface is glassy, depth perception is difficult and such a procedure could result in stalling out at an excessive height. The seaplane pilot's technique for landing on glassy water is to touch down just above stalling speed.*

River ditchings impose the problem of current. Ditching with strong river currents could call for landing with the current, even if it meant a downwind landing.

Still other variables must be considered when attempting to ditch at sea. Touchdown should always be made parallel to the movement of and to the lee side of high surf or swells.

Another point: Is power still available? If so, the landing should be accomplished while a power approach can permit the slowest possible speed at touchdown.

• Second-in-Command Time

I am a private pilot with approximately 100 hours total flying time. I would like to know the exact meaning of FAR Part 61 §61.39 par. (c) concerning the logging of second-in-command time. Must the airplane be of a type requiring a copilot in order to log time as second-in-command? (I am assuming the person assisting the pilot is a licensed pilot himself and the plane has dual controls.)

Manhattan, Kan.

Paragraph 61.39 (d) of the Federal Aviation Regulations provides for the logging of second-in-command pilot time by a private or commercial pilot for that flight time "during which he is performing the duties of a second-in-command." The duties of a second-in-command can only be performed when a second-in-command is required in the aircraft, either by reason of its operating specifications or because of a specific regulation, such as that requiring two pilots for air taxi operations under IFR conditions.

• No Private Ticket

Would I be impertinent in questioning the regulation that prohibits two student pilots who have soloed from flying together? It seems illogical, but I presume the FAA has good reason.

Philadelphia

Federal Aviation Regulation Part 61 prohibits student pilots from carrying passengers. And since both pilots could not operate the aircraft at the same time, one of the pilots would necessarily have to be a passenger. This is a rule of long standing and was enacted to protect the public from flying with pilots who as yet had not demonstrated that they could meet the requirements of a private pilot.

• Sorry; No C—Yet

We have in this area several antique aircraft which have been restored, and a number in the process of restoration. We desire to use the old style registration markings in order to preserve the authentic markings of the aircraft. We have been informed by the local FAA personnel that while smaller size numbers may be permitted on wings and vertical tail surfaces, we are not allowed to use the letter C in the registration, i.e., the original registration may have been NC 250H, yet we may only use N 250H without the C. We find no restrictions in the FARs that prohibit the use of the letter C.

Many of these aircraft are being restored for historic reasons and will not be flown outside the United States and will be used mainly for sport and exhibitions.

We would like to have an official interpretation of this part of the FARs; is the C prohibited?

Name withheld

The FAA is in the process of re-evaluating the marking requirements for antique aircraft including the limitations on the use of the letter C. FAA Aviation News *will keep you posted on any changes that may be forthcoming, but as of today the C is prohibited. Here's the story:*

The FARs now state that all aircraft operators shall display on their aircraft the Roman capital letter N followed by the registration number—Section 45.23(a). Section 47.15(b) requires that at least one numeral separate the prefix N and any suffix letter in a U.S. aircraft registration number. (Section 45.23(b) provides an exception to 45.23(a) for aircraft registered before Jan. 1, 1949; such aircraft may display the letters C, R, X or L until the first time the aircraft is recovered or refinished to an extent that requires a reapplication of the marks.)

FAA Aviation News welcomes comments from the aviation community. We will reserve this page for an exchange of views. No anonymous letters will be used, but names will be withheld on request.

• Graduation Certificates

I received my ground instructor rating last year and have thoroughly enjoyed teaching more than 100 students since then. I have been teaching at Wayne Technical Institute and have been using my certificate number on the certificate Wayne gives to students who complete their ground school course. My question: Is there a standard FAA certificate that can be given to students?

Goldsboro, N.C.

The FAA formerly provided graduation certificate forms for certificated pilot flight and ground schools, but has discontinued these forms. It is possible that you may find some graduation certificates still in stock in your local general aviation district office, but when this supply is exhausted, it will not be replenished. Certificated pilot schools are encouraged to provide distinctive graduation certificates of their own design for their graduates.

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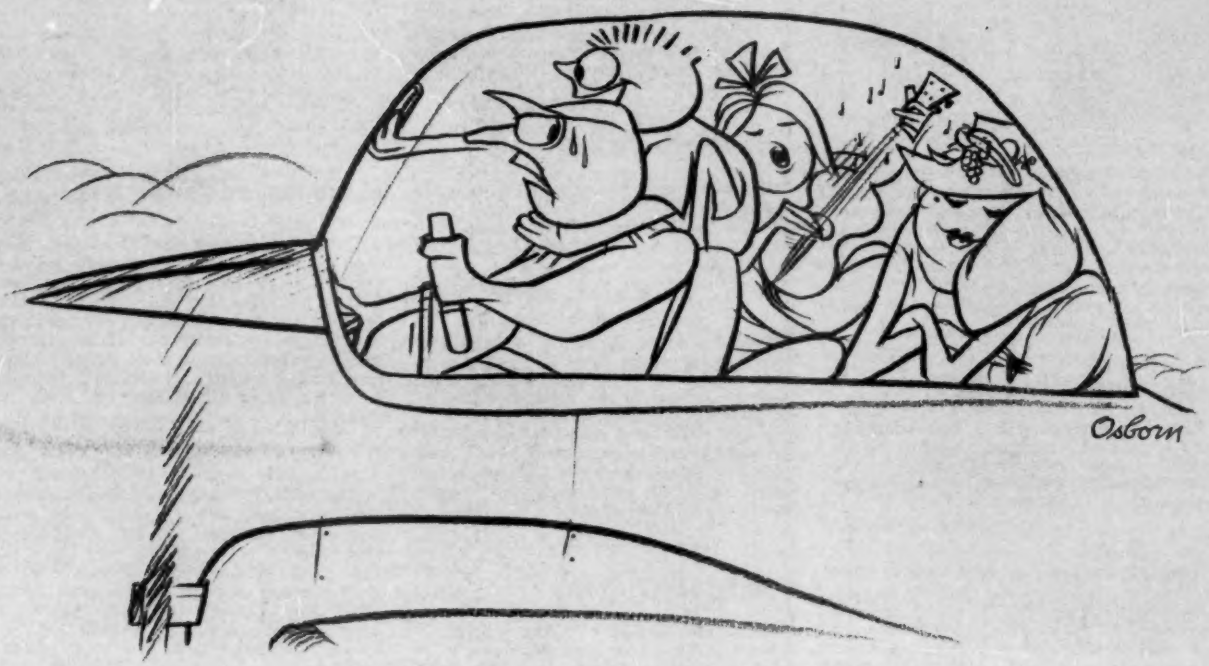

Without distraction from the mob.